

Notice of Allowability

Application No.

09/842,019

Examiner

Toan D. Nguyen

Applicant(s)

SUSNOW ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/22/06.
2. ☒ The allowed claim(s) is/are 1-25.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>8/31/06</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Viet V. Tong on August 31, 2006.

2. The application has been amended as follows:

IN THE CLAIMS:

In claim 9 line 11, the limitation "virtual lanes VLs" has been replaced by --- virtual lanes (VLs) ---.

In claim 9 line 17, the limitation "virtual lanes VLs" has been replaced by --- virtual lanes (VLs) ---.

In claim 9 line 16, the limitation "a LinkActive state" has been replaced by --- the LinkActive state ---.

In claim 9 line 20, the limitation "a LinkActive state" has been replaced by --- the LinkActive state ---.

In claim 9 line 22, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 9 line 24, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 9 line 29, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 9 line 33, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 9 line 35, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 12 line 11, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 12 line 12, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 19 line 7, the limitation "a LinkActive state" has been replaced by --- the LinkActive state ---.

In claim 19 line 8, the limitation "virtual lanes VLs" has been replaced by --- virtual lanes (VLs) ---.

In claim 19 line 11, the limitation "a LinkActive state" has been replaced by --- the LinkActive state ---.

In claim 19 line 13, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 19 line 15, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 19 line 20, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 19 line 24, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

In claim 19 line 26, the limitation "virtual lane VL" has been replaced by --- virtual lane (VL) ---.

Allowable Subject Matter

3. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, the prior art fails to teach a combination of the steps of:

a N-bit counter arranged to accumulate free credits relinquished, when a data packet is removed from a receive buffer and buffer space is reclaimed as available for data packet storage, or when a link packet is received whose Flow Control Total Bytes Sent (FCTBS) field differs from actual blocks received (ABR) at the given port, in the specific combination as recited in the claim.

Regarding claim 8, the prior art fails to teach a combination of the steps of:

one or more communication ports provided in said host-fabric adapter of said host system, each port including a set of transmit and receive buffers to send and receive data packets concurrently via respective transmitter and receiver at an end of a physical link, via said switched fabric, and a flow control mechanism utilized to prevent loss of data due to receive buffer overflow at the end of said physical link, said flow control mechanism including a N-bit counter arranged to accumulate free credits relinquished, when a data packet is removed from a receive buffer and buffer space is reclaimed as available for data packet storage, or when a link packet is received whose Flow Control Total Bytes Sent (FCTBS) field differs from actual blocks received (ABR)

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at a given port, a first comparator arranged to make comparison between accumulated free credits from the N-bit counter and a programmable credit threshold, a second comparator arranged to make comparison between a current buffer receive utilization indicating a data storage level of the receive buffer and a programmable utilization threshold, and a logic device arranged to track a current link state of a corresponding port, to monitor the amount of receive buffer resources from the first and second comparators and to schedule a link packet transmission, via the physical link, in the specific combination as recited in the claim.

Regarding claim 9, the prior art fails to teach a combination of the steps of:

one or more communication ports provided in said host-fabric adapter of said host system, each port including a set of transmit and receive buffers to send and receive data packets concurrently via respective transmitter and receiver at an end of a physical link, via said switched fabric, and a flow control mechanism utilized to prevent loss of data due to receive buffer overflow at the end of said physical link, wherein said flow control mechanism is configured to support flow control through multiple virtual lanes (VLs) on a given port and to perform:

determining when a Link State Machine transitions into one of a LinkInitialize state, a LinkArm state and a LinkActive state, or when a configuration strap for enabling loopback operation changes states, in the specific combination as recited in the claim.

Regarding claim 12, the prior art fails to teach a combination of the steps of:

one or more communication ports provided in said host-fabric adapter of said host system, each port including a set of transmit and receive buffers to send and

receive data packets concurrently via respective transmitter and receiver at an end of a physical link, via said switched fabric, and a flow control mechanism utilized to prevent loss of data due to receive buffer overflow at the end of said physical link, wherein said flow control mechanism contains a Link Packet Scheduler per virtual lane (VL) arranged to schedule a link packet transmission for a virtual lane (VL) corresponding to said Link Packet Scheduler, wherein said Link Packet Scheduler comprises:

a N-bit counter arranged to accumulate free credits relinquished, when a data packet is removed from a receive buffer and buffer space is reclaimed as available for data packet storage, or when a link packet is received whose Flow Control Total Bytes Sent (FCTBS) field differs from actual blocks received (ABR) at a given port, in the specific combination as recited in the claim.

Regarding claim 19, the prior art fails to teach a combination of the steps of:

determining when a Link State Machine transitions into one of a LinkInitialize state, a LinkArm state and a LinkActive state, or when a configuration strap for enabling loopback operation changes state;

if the Link State Machine transitions into one of the LinkInitialize state, the LinkArm state and a LinkActive state, or when the configuration strap for enabling loopback operation changes states, scheduling transmission of a link packet for all supported virtual lanes (VLs) on a given port;

if the Link State Machine does not transition into one of the LinkInitialize state, the LinkArm state and the LinkActive state, or when the configuration strap for enabling loopback operation does not change states, determining whether a Link Packet

Watchdog Timer per virtual lane (VL) has expired, in the specific combination as recited in the claim.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan D. Nguyen whose telephone number is 571-272-3153. The examiner can normally be reached on M-F (7:00AM-4:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Huy Vu can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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